

## **WPA Form 3 – Notice of Intent** **Supplemental Information**

Project: Proposed Repair/Rehabilitation of Town Owned Bridges

### **A. General Information:**

1.) Project Location:

Bridge #	a. Street Address	d. Latitude	e. Longitude	f. Assessors Map/Plat Number	g. Parcel/Lot Number
Bridge A-02-008	River Street over Fort Pond Brook at Carriage Dr	42° 27' 24.4"	71° 26' 14.8"	Town Atlas Map H-3	N/A
Bridge A-02-020	River Street over Fort Pond Brook at Merriam Ln	42° 27' 29.6"	71° 26' 27.3"	Town Atlas Map H-3	N/A
Bridge A-02-021	River Street over Fort Pond Brook at Vanderbelt Rd	42° 27' 33.0"	71° 26' 35.4"	Town Atlas Map H-3	N/A
Bridge A-02-023	Martin Street over Fort Pond Brook	42° 27' 31.6"	71° 27' 44.6"	Town Atlas Map H-2A	N/A
Bridge A-02-009	Brook Street over Nashoba Brook	42° 29' 37.8"	71° 25' 15.5"	Town Atlas Map E-4	N/A

8.) Property recorded at the Registry of Deeds for: (multiple locations):

River Street (Bridge #A-02-008, #A-02-020 & A-02-021) - Town Atlas Map H-3  
Middlesex County Commissioner Record Book, Entry Dated January 1848, Page 249

Martin Street (Bridge #A-02-023) - Town Atlas Map H-2A  
Record Book 23604 Page 448 & Record Book 6204 Page 204

Brook Street (Bridge #A-02-009) - Town Atlas Map E-4  
Record Book 7125 Page 38



A. 6.) **General Project Description:**

The Town has contracted Chas H. Sells Inc. to inspect and evaluate ten (10) Town-owned bridges in Acton. As a result of their phase 1 report, Chas H. Sells recommended the following immediate repairs to five (5) bridges listed below to extend the structural capacity and upgrade the safety features of these bridges.

**Bridge No. A-02-008 (River Street over Fort Pond Brook at Carriage Drive)**

The corrugated steel deck arch and lower connection plates be cleaned and coated with a new protective coating, particularly at the lower ends where the steel plate meets the concrete abutments.

**Bridge No. A-02-009 (Brook Street over Nashoba Brook)**

The steel corrugated pipe arch culverts be cleaned and coated with a new protective coating. Also, voids between the headwalls and pipe arches shall be filled to prevent the infiltration of water behind the pipe arches. Lastly, the stone masonry bridge rail and headwalls shall be re-pointed to fill the large gaps in the mortar.

**Bridge No. A-02-020 (River Street over Fort Pond Brook at Merriam Lane)**

The steel corrugated pipe culverts be cleaned and coated with a new protective coating. Also, voids between the headwalls and pipe arches shall be filled to prevent the infiltration of water behind the pipe arches. Riprap shall also be placed at the culvert ends to prevent undermining.

**Bridge No. A-02-021 (River Street over Fort Pond Brook at Vanderbilt Road)**

The steel corrugated pipe arch culverts be cleaned and coated with a new protective coating. Also, voids between the headwalls and pipe arches shall be filled to prevent the infiltration of water behind the pipe arches. Riprap shall also be placed at the culvert ends to prevent undermining and the failed section of the southwest wingwall should be rebuilt.

**Bridge No. A02-023 (Martin Street over Fort Pond Brook)**

The steel corrugated pipe arch culverts be cleaned and coated with a new protective coating, weld/fasten steel corrugated plates over the areas where there is 100% section loss (holes) and severe rusting and steel delamination, place a reinforced concrete paved invert in both pipe arches, fill the voids between the headwalls and the pipe arches to prevent the infiltration of water behind the pipe arches and place riprap at both ends to prevent undermining.

## CONTROL OF WATER

The water control measures shown in the Plans represent current methods used by MassHighway in diverting water so that work can be accomplished “in-the-dry” and so that sediments can be contained.

The control of water conforms to the relevant provisions of Section 140 of the MassHighway Standard Specifications and the following:

This work includes all dewatering necessary to accomplish the rehabilitation of the existing structures as shown on the Plans.

The Contractor’s attention is directed to the section of these Special Provisions that addresses the requirements for Sedimentation and Erosion Controls for this project.

Stream diversions and dewatering of excavation shall be conducted to ensure that the existing corrugated metal pipes can be repaired and/or recoated with protected coating and that new riprap can be placed “*in the dry.*”

As part of the work, it is the responsibility of the Contractor to determine the need and extent of stream diversions, sedimentation basins and dewatering techniques and sedimentation controls needed to control water and sediment at the site. During the actual process of executing the excavation operations, the Contractor shall submit the methods and materials he/she proposes to use for the Town’s approval.

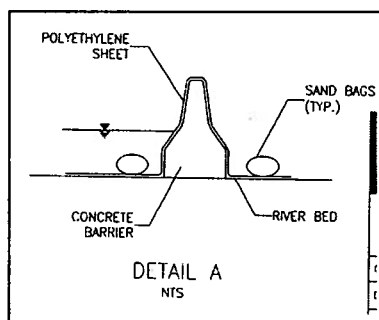
### Construction Methods

Stream diversions shall be conducted in such a manner as to minimize siltation and prevent contamination of the waterway.

Maximum screen sizes on the inlet side of all pumps shall not exceed ½ inch.

Recommended devices to control water at the site include, but are not limited to:

- Installation of precast concrete median barriers or blocks covered with sedimentation fabric and sandbags to reduce water infiltration.



- Sandbag dams installed at the top of the excavation to provide temporary Control of water.
- Portable cofferdam system comprised of steel frames covered by an impervious fabric membrane.
- Temporary interlocking steel sheeting.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Town has the right to order the Contractor to stop all operations when in his/her judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

The Contractor shall provide the means of removing all sediment from water pumped from the excavation areas; this shall include the use of sedimentation basins, check dams, sedimentation fences or tanks.

#### **PROTECTIVE COATINGS:**

The metal corrugated bridges are proposed to be re-coated with a standard bituminous coating which is similar to what was originally applied. The coating would most likely be spray applied and be a minimum of 0.05" thick outside the normal water regions and 1/8" minimum thick within the normal water level areas. The coating would conform to AASHTO M-190 (Type A and C Coatings).

#### **REINFORCED CONCRETE PAVED INVERT** **(Bridge No. A02-023 -Martin Street over Fort Pond Brook)**

##### **Description**

Work under this Item shall consist of installing a reinforced concrete paved invert in the metal corrugated elliptical pipe arches in accordance with the Plans and manufacturer's recommendations, and as directed by the Town.

##### **Materials**

Non-shrink grout for pavement lining shall conform to the following requirements:

- (a) Bagged, pre-mixed formulations of non-shrink grout shall meet the requirements of ASTM C 1107, Grade B. The grout must be mixed with potable water for use. The grout shall be mixed to a flowable consistency as determined by ASTM C 230. All bagged material shall be clearly marked with the manufacturer's name, date of

- production, batch number and written instructions for proper mixing, placement and curing of the product.
- (b) The Contractor may formulate and design a grout mix for use on the project in lieu of using a pre-bagged product. The Contractor must obtain prior written approval of the Engineer for any such proposed mix design. Any such mix design shall include the proportions of hydraulic cement, potable water, fine aggregates, expansive agent, and any other necessary additive or admixture. This material shall meet all of the same chemical and physical requirements as must the pre-bagged grout, in accordance with ASTM C 1107, Grade B.

The non-shrink grout for pavement lining shall have a minimum 28 day compressive strength of 35 MPa.

Welded steel wire fabric shall conform to Section M8.01.2 and shall be Hot-Dip Galvanized in conformance with ASTM A123.

All bolts, nuts, coupling nuts and washers shall be galvanized in conformance with ASTM A153.

All bolts shall conform to ASTM A307.

All nuts shall conform to ASTM A563M.

#### Construction Methods

Concrete pavements shall be placed after the pipe has been prepared.

Pavements shall have a troweled surface finish.

Pavements may be placed by hand or slip forming methods. They must be placed in a full thickness, as shown on Plans, screeded and finished to the necessary smoothness.

All reinforcement is set-up off the corrugation crests to the center of the pavements over the crest and anchored

The interior surface areas of pipes to be paved shall be cleaned and free of running water. Dirt and construction debris shall be removed. Brushing, sweeping or flushing are appropriate means of cleaning.

The area of pipe to receive concrete pavement shall be field coated after being cleaned in conformance with AASHTO Standard Specifications M243-94.

The pavement lining is to be placed in dry conditions and adequately cured to preclude erosion of the concrete, loss of cement or the formation of excessive laitance.

Curing operations shall begin immediately following the completion of the placement of the pavement or lining in a section of pipeline and shall continue for a minimum period of 7 days or as directed by the Engineer. The surface of the concrete shall be kept moist during the cure period.

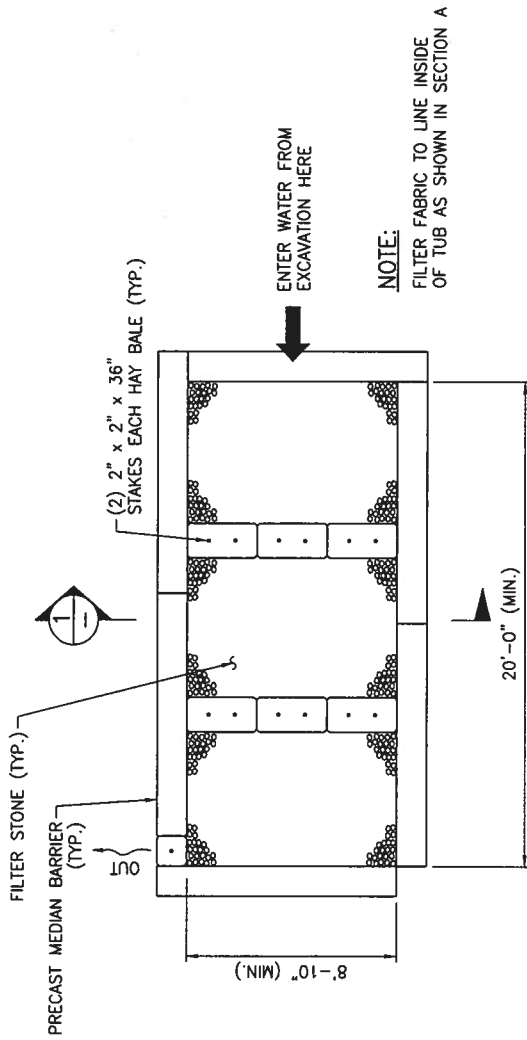
The Contractor shall furnish compression test specimen at sufficient intervals to demonstrate the 7, 14 and 28-day compressive strength levels of the concrete used as directed by the Engineer.

Defects in pavements and linings include, but are not limited to, sand pockets, voids, excessively cracked areas, lining thicknesses or concrete compression strengths or finished surfaces that do not meet the requirements of this standard practice.

For trowel finished applications, 10 locations in each days production shall be selected in accordance with a predetermined sampling method agreed to by the Engineer. In each of the 10 places, a 300mm straight edge shall be laid parallel to the axis of the pipe. In no fewer than 9 out of 10 locations, any gap between the finished surface and the straight edge must be no greater than 3.2mm.

When agreed upon by the Contractor and Engineer, areas found to be defective may be repaired. Defective areas that extend less than one pipe diameter in length along the pipeline may be repaired by hand methods. Larger areas shall be repaired by the same methods used in the original concrete placement. All repairs shall require the same methods used in the original concrete placement. All repairs shall require the defective materials to be removed, the exposed pipe to be cleaned and new concrete to be placed in accordance with this Specification. When suitable repairs are not made to bring the pavement into compliance with this standard practice, the work shall be rejected.

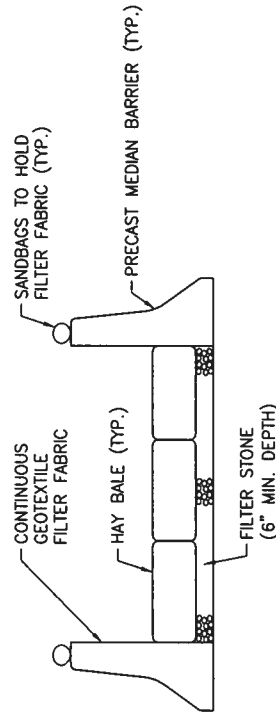
Temperature and shrinkage cracks less than 1.6mm in width do not require repair. Cracks wider than 1.6mm need not be repaired if it can be demonstrated to the satisfaction of the Engineer that the cracks will heal autogenously under continuous soaking in water. Autogeneous healing may be demonstrated by any procedure that keeps the concrete continuously wet or moist.



**PLAN**

**NOTE:**

REQUIRED SIZE TO BE DETERMINED BY CONTRACTOR AS APPROVED BY THE ENGINEER



**SECTION 1**

**FILTER BASIN**  
SCALE: N.T.S.

### **FILTER BASIN NOTES:**

1. THIS WORK SHALL CONSIST OF THE CONSTRUCTION OF A FILTER BASIN TO BE USED DURING DEWATERING FOR THE PURPOSE OF DESILTING WATER BEFORE BECOMING SEDIMENT-LADEN. THIS SHALL BE ACCOMPLISHED BY MEANS OF PUMPING IT FROM THE CONSTRUCTION SITE INTO THE FILTER BASIN LOCATED AT AN ACCEPTABLE UPLAND AREA (SEE NOTE 6). PUMPING INTO THIS BASIN SHALL CEASE BEFORE THE FLOW FROM THE BASIN BECOMES SEDIMENT-LADEN.
2. SURFACE WATER FLOW SHALL BE DIVERTED AROUND THIS DEVICE.
3. THE CONTRACTOR SHALL PREVENT CHANNELIZED FLOW AND EROSION DUE TO FILTER BASIN DISCHARGE BY INSTALLATION OF ADEQUATE EROSION PROTECTION.
4. ONCE THE FILTER BASIN BECOMES FILLED TO 1/2 OF THE HEIGHT OF THE HAY BALES, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IMMEDIATELY IN AN APPROVED DISPOSAL AREA OUTSIDE THE CONSTRUCTION SITE.
5. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE ENGINEER APPROVES THEIR REMOVAL. GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITIONS UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE ENGINEER.
6. LOCATION OF FILTER BASIN  
INITIAL LOCATION OF THE FILTER BASIN SHALL BE AS SHOWN ON THE PLANS BUT FINAL LOCATION OF THE BASIN SHALL BE RESERVED FOR THE RESIDENT ENGINEER'S JUDGMENT DEPENDING ON THE SITE STAGING CONSTRAINTS. THIS LOCATION MUST REMAIN IN AN UPLAND AREA OUTSIDE OF THE RIVER (LAND UNDER WATER) AND BORDERING VEGETATED WETLANDS.

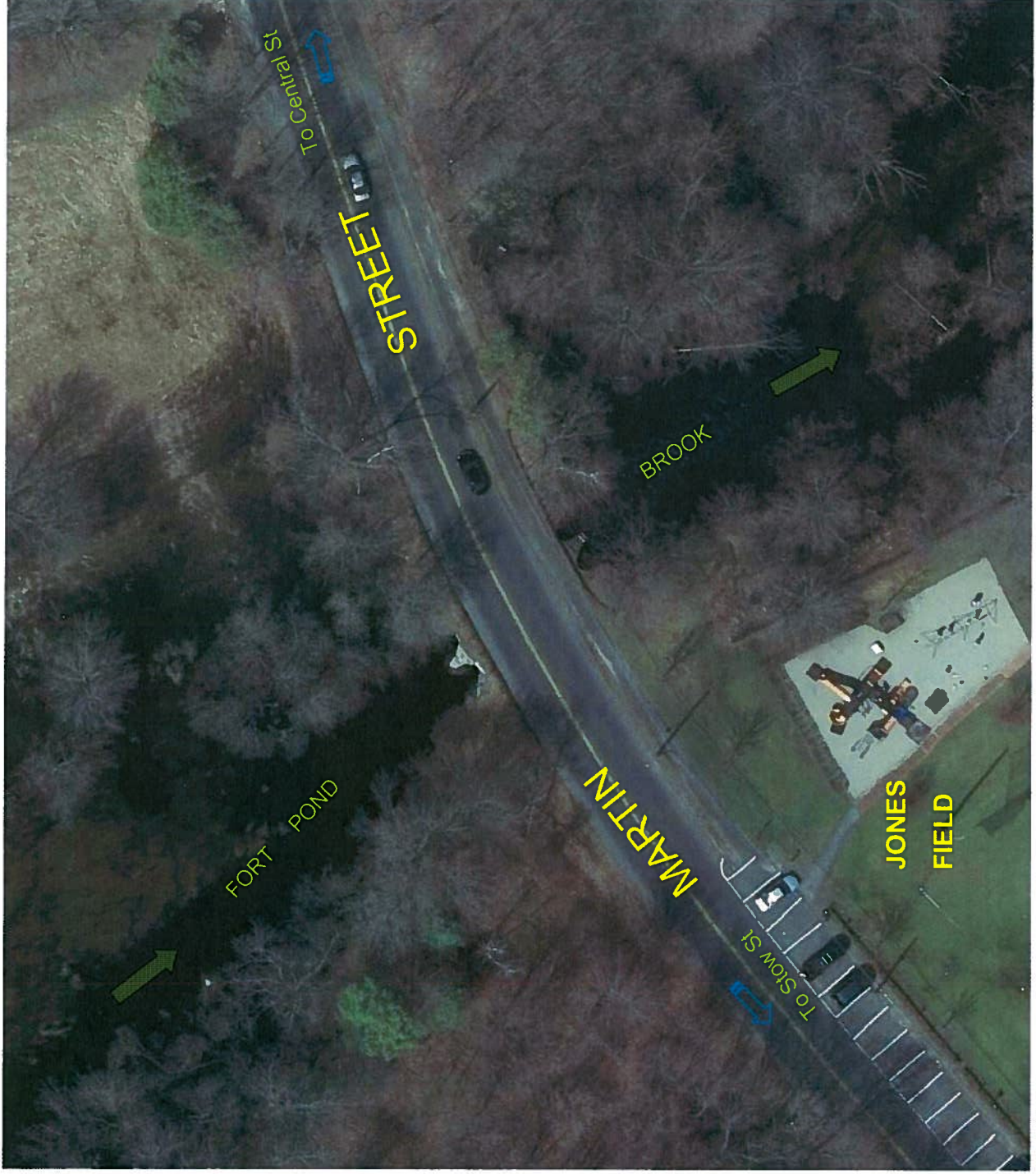
## **EXAMPLE OF SEDIMENT FILTER BASIN**



Brook Street over Nashoba Brook – Bridge #A-02-009



Martin Street over Fort Pond Brook – Bridge #A-02-023





River Street over Fort Pond Brook – Bridge #A-02-008





River Street over Fort Pond Brook – Bridge #A-02-020





River Street over Fort Pond Brook – Bridge #A-02-021

